

DLT terms and definitions (ITU-T X.1400)

Heung Youl Youm, PhD

Chairman, ITU-T SG17

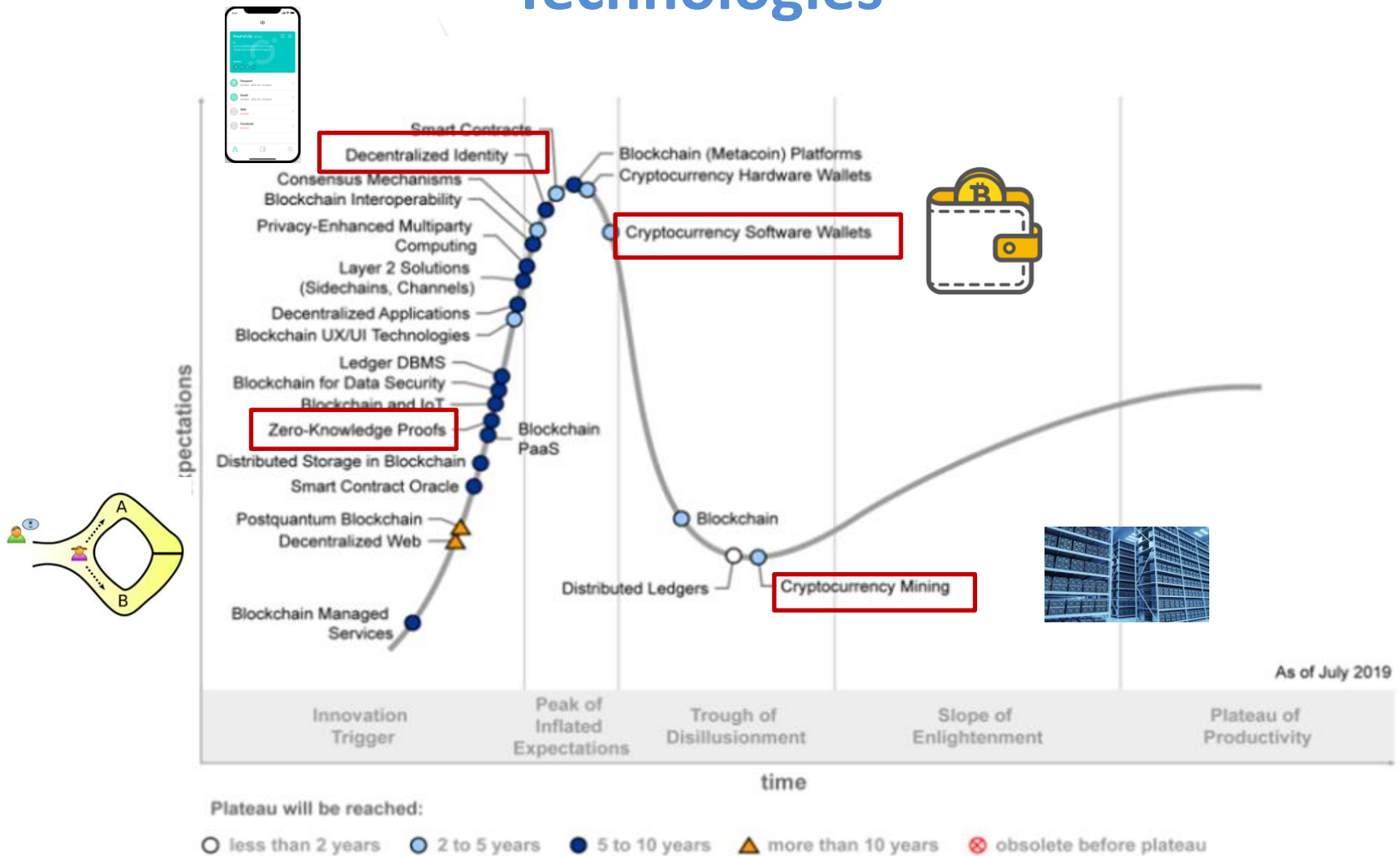
Editor of X.1400

Professor, Soonchunhyang University, Korea(Rep. of)

Content

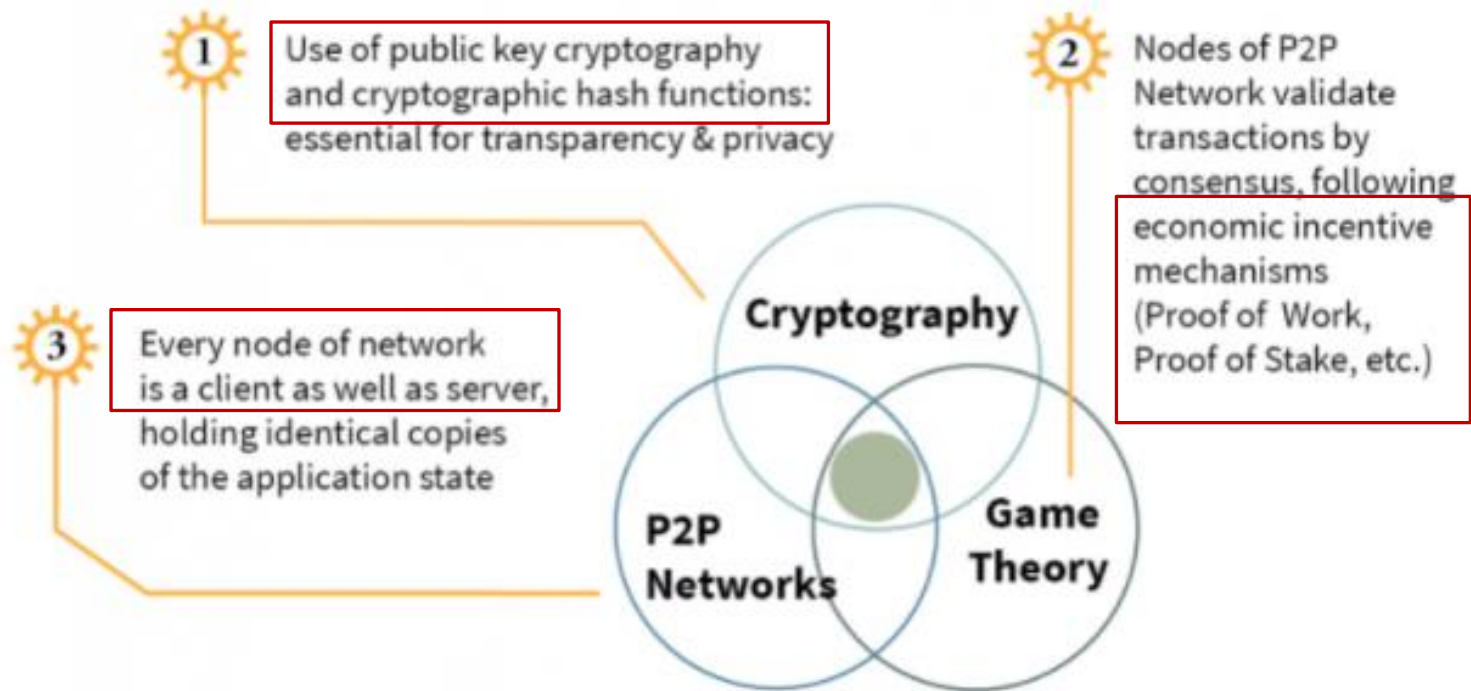
- Overview of DLT
- History of FG DLT D1.1 and ITU-T X.1400
- Content of ITU-T X.1400
- Key terms in ITU-T X.1400
- Conclusion and way forward

2019 Gartner Hype Cycle for Blockchain Technologies



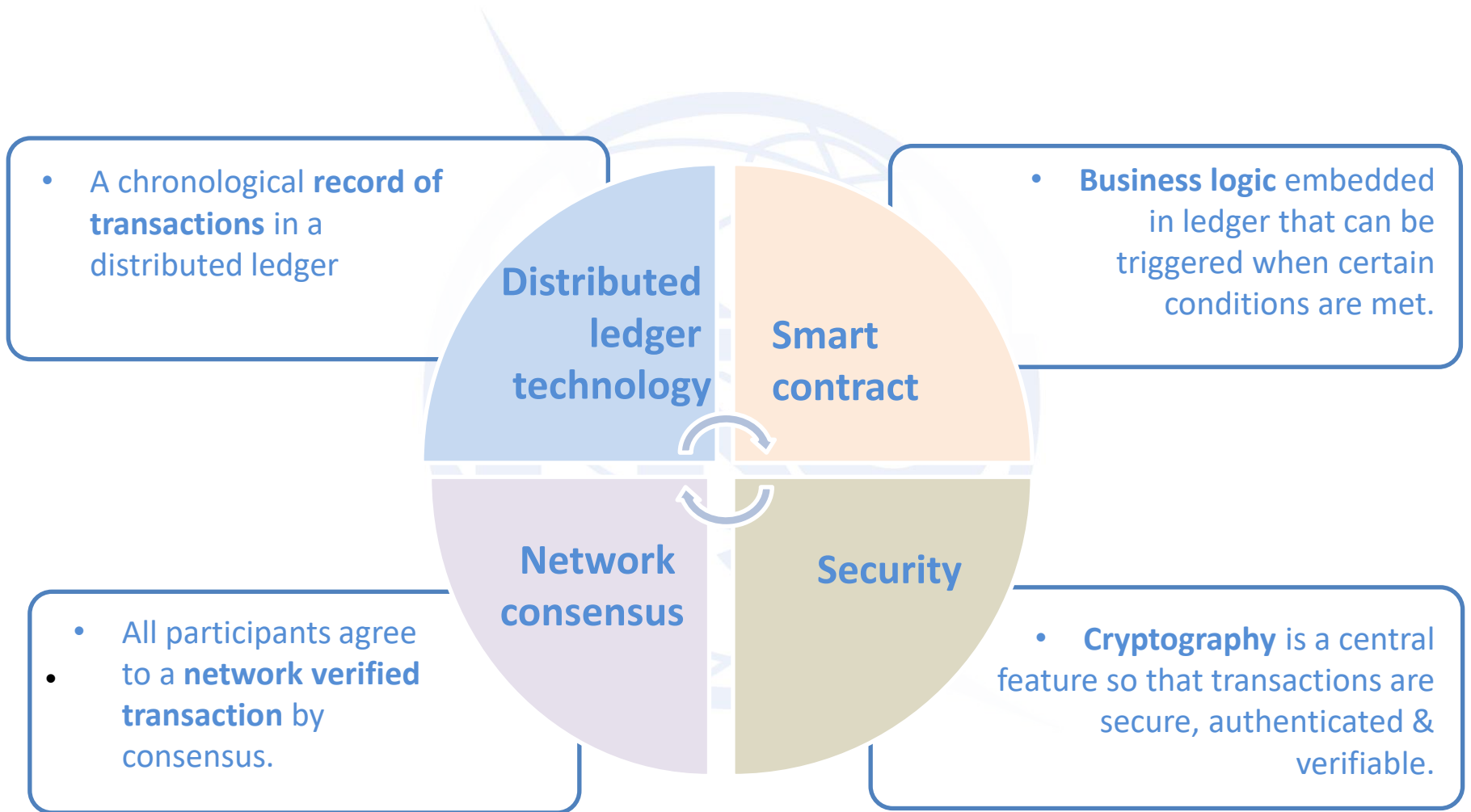
(Source: <https://www.gartner.com/en/newsroom/press-releases/2019-10-08-gartner-2019-hype-cycle-shows-most-blockchain-technologies-are-still-five-to-10-years-away-from-transformational-impact>)

Underlying technologies behind DLT



(Source: <https://blockchainhub.net/blockchain-intro/>)

DLT – four characteristics



Types of DLT

Permission-less, Public

- Bitcoin
- Ethereum

Permissioned, Public

- Land properties
- University certificate

Permission-less, Private

- Public poll

Permissioned, Private

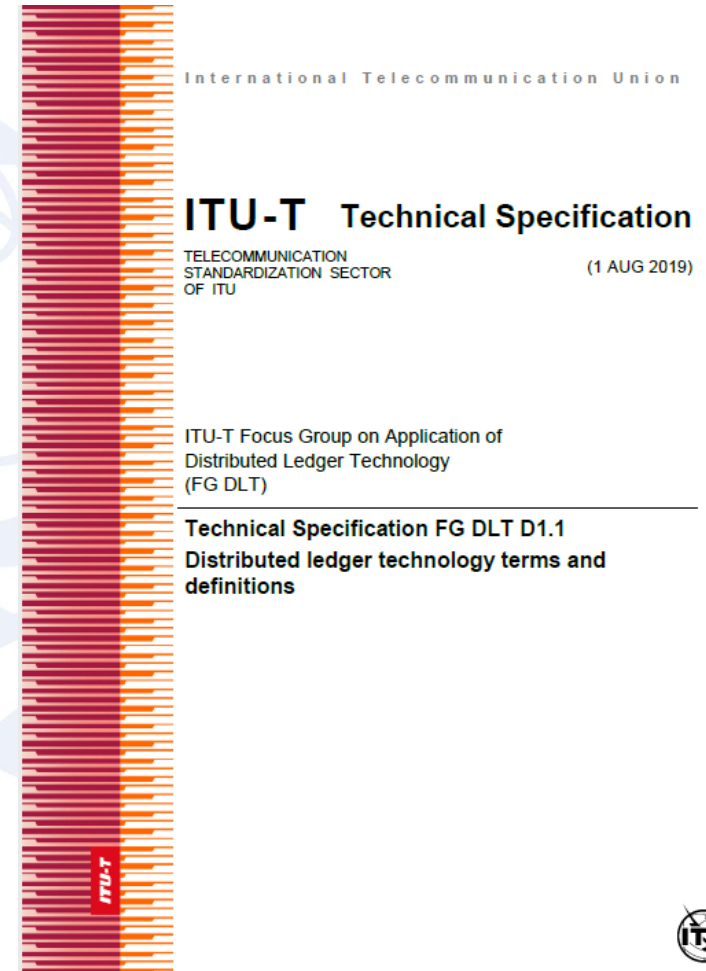
- Medical record

Permissioned vs. Permissionless: Who can write data to a Distributed ledger (i.e., accessibility)

Public vs. Private: Who can read from a distributed ledger (i.e., visibility)

FG DLT D1.1 – DLT terms and definitions

- FG-DLT, TS FG DLT D1.1, Distributed ledger technology terms and definitions (August 2019)
 - Established at the first FG DLT meeting in Geneva on 17-19 October 2017.
 - Interim Drafts were reviewed and updated every FG DLT meeting.
 - Agreed as Technical Specification at the last FG DLT meeting in Geneva 29 July - 1 August 2019.
 - 62 terms were agreed.



ITU-T X.1400 - Terms and definitions for DLT

- ITU-T X.1400
 - NWIP was approved at September 2019 SG17 meeting as TR.dlt-td.
 - TR.dlt-td was changed to X.dlt-td at March 2020 SG17
 - X.dlt-td was consented at September 2020 and X.1400 approved on 28 October after AAP LC (4 weeks).
 - 66 terms were agreed.



INTERNATIONAL TELECOMMUNICATION UNION

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TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

X.1400

(10/2020)

SERIES X: DATA NETWORKS, OPEN SYSTEM
COMMUNICATIONS AND SECURITY

Secure applications and services (2) – Distributed ledger
technology security

**Terms and definitions for distributed ledger
technology**

Scope of X.1400

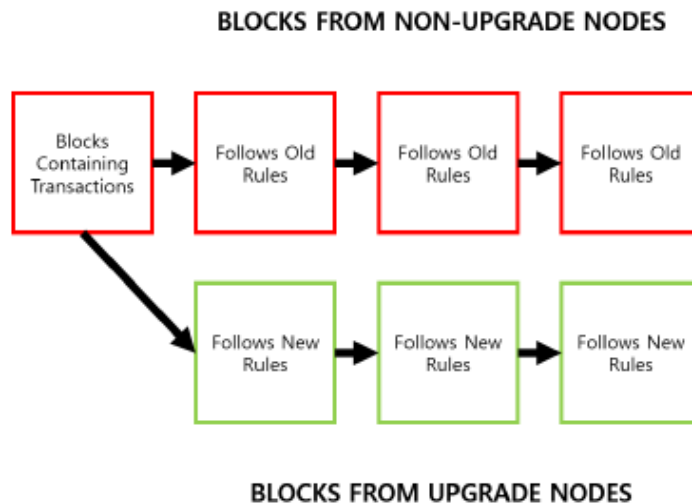
- Scope
 - This Recommendation contains a baseline set of terms and definitions for distributed ledger technology (DLT). The definition of each term provides a basic characterization of the term, and where appropriate, a note is included to provide additional clarity.
- 66 terms defined – 4 new terms and definitions were added to those of FG DLT 1.1:
 - 6.9 blockchain system
 - 6.22 distributed ledger technology (DLT)
 - 6.23 DLT system.
 - 6.54 sidechain

Content of X.1400

- 1. Scope
- 2. Reference
- 3. Definitions
- 4. Abbreviations and acronyms
- 5. Conventions
- 6. Terms and definitions related to DLT
 - 6.1 Account
 - ...
 - 6.66 Wallet
- Appendix I Key points and rationales for DLT basic terminology
 - A.1 Defining distributed ledger technology
 - A.2 How does DLT operate?
 - A.3 DLT actors and components
 - A.4 Types of DLT
 - A.5 Potential use cases for DLT
 - A.6 Consensus mechanisms
 - A.7 Smart contracts

Key terms and definitions

- 6.6 block: Individual data unit of a blockchain (see 6.8), composed of a collection of transactions (see 6.65) and a block header.
- 6.21 distributed ledger: A type of ledger (see 6.36) that is shared, replicated, and synchronized in a distributed and decentralized manner.
- 6.28 hard fork: Change to the protocol or rules that result in a fork that is not backward compatible.



Key terms and definitions (cont.)

- 6.33 incentive mechanism [b-ISO/TC 307]: Method of offering reward for some activities concerned with the operation of a distributed ledger system.
- 6.47 permissioned distributed ledger system: Distributed ledger system in which permissions are required to maintain and operate a node.
- 6.48 permissionless distributed ledger system: Distributed ledger system where permissions are not required to maintain and operate a node.
- 6.49 proof of work: Consensus process to solve a difficult (costly, time-consuming) problem that produces a result that is easy for others to verify.
- 6.55 smart contract: A program written on a distributed ledger system which encodes the rules for specific types of distributed ledger system transactions in a way that can be validated, and triggered by specific conditions.

Conclusion and a way forward

- No need to define different and inconsistent terms in every Recommendations (deliverables).
- Baseline set of terms and definitions across all DLT deliverables.
- Widely used by the future Recommendations and texts in DLT area.
- Compatible with ISO 22739:2020, Blockchain and distributed ledger technologies — Vocabulary
- Need to update this Recommendation to add new terms and definitions, if necessary.

Thank you for your attention.

SAFE (Security is Absolutely First Everywhere)